PROJECT SPECIFIC PLAN
FOR AREA 9, PHASE II CERTIFICATION SAMPLING

FERNALD CLOSURE PROJECT
FERNALD, OHIO

DECEMBER 2003

U.S. DEPARTMENT OF ENERGY

21130-PSP-0003
REVISION 0
FINAL

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A1PI	Area 1, Phase I
A1PII	Area 1, Phase II
A9PI	Area 9, Phase I
A9PII	Area 9, Phase II
ASL	analytical support level
BTV	Benchmark Toxicity Value
CDL	Certification Design Letter
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
COC	constituent of concern
CU	certification unit
DOE	U.S. Department of Energy
DQO	Data Quality Objectives
FACTS	Fernald Analytical Computerized Tracking System
FAL	Field Activity Log
FCP	Fernald Closure Project
FRL	final remediation level
GFAA	graphite furnace atomic absorption
GC	gas chromatography
GC/MS	gas chromatography mass spectroscopy
GPC	gas proportional counting
GPS	Global Positioning System
HPLC	high performance liquid chromotography
ICP-AES	inductively coupled plasma atomic emission spectroscopy
ICP/MS	inductively coupled plasma mass spectroscopy
MDL	minimum detection level
mg/kg	milligrams per kilogram
NAD83	North American Datum of 1983
pCi/g	picoCuries per gram
PCB	polychlorinated biphenyl
PSP	project specific plan
QA/QC	Quality Assurance/Quality Control
SCQ	Sitewide CERCLA Quality Assurance Project Plan
SDFP	Soil and Disposal Facility Project
SED	Sitewide Environmental Database
SEP	Sitewide Excavation Plan
SPL	Sample Processing Laboratory
TAL	Target Analyte List
V/FCN	Variance/Field Change Notice
VOC	volatile organic compound
VSL	validation support level
WAO	Waste Acceptance Organization

1.0 INTRODUCTION

1.1 BACKGROUND AND PURPOSE

Area 9, Phase II (A9PII) is a 12.6-acre parcel of off-property land that is south of Area 9, Phase I (A9PI) and east of Area 1, Phase II (A1PII), located along the eastern property boundary of the Fernald Closure Project (FCP). The majority of the property is plowed field used for crop production. A9PII also includes a 0.29-acre area that is located north of Area 1, Phase I (A1PI) and is located between the northern FCP fence line and State Route 126. A location map of A9PII is provided on Figure 1-1.

Both areas of land that make up A9PII were precertified through the use of real-time scanning to ensure there was not radiological contamination above off-property final remediation levels (FRLs). In addition to real-time scanning, physical samples were collected from A9PII located east of A1PII. These samples were collected to evaluate surface and subsurface soils in the cultivated area; evaluate surface soil in the wooded, uncultivated area; and evaluate four historical sample locations that exhibited greater than FRL results for total uranium.

Three of the four historical locations were below the total uranium FRL. The fourth location still exhibited greater than 2X FRL results, and was subsequently delineated and excavated. Real-time scanning and physical samples collected immediately following excavation showed the area to be below the FRL, and the area was backfilled with clean topsoil that was purchased from an offsite location. This excavation area lies in between two areas that were excavated between 1993 and 1994 as part of Removal Action 14, as shown on Figure 1-2. The final report for Removal Action 14 indicated that the southern excavation area, located directly adjacent to the former sewage treatment plant, was backfilled as well.

Results from physical sampling for both surface and subsurface soil indicate that the majority of the area specific constituents of concern (ASCOC) were below the FRL. Antimony, arsenic, and beryllium exhibited slightly greater than FRL results for some samples but the results are in line with data from the background soil study that was completed in 2000. Dioxin and furan samples were also collected to determine representative concentrations.

Consistent with the Sitewide Excavation Plan (SEP), off-site properties immediately adjacent to on-property areas that were remediated will require certification. Both A1PI and A1PII were remediated and certified between 1998 and 2000. The area located on-property north of A1PI in between the FCP

fence line and State Route 126 will act as a buffer between the former uranium hotspot and elevated radium-228 result in A1PI and off-property, therefore this area will be certified to on-property FRLs. The area located off-property to the east of A1PII will be certified to the more stringent off-property FRLs. The purpose of certification is to verify that residual soil constituent of concern (COC) concentrations meet the FRLs and background concentrations when evaluated by statistical criteria documented in Appendix G of the SEP.

1.2 SCOPE

This Project Specific Plan (PSP) includes details of certification sampling, analysis and validation that will take place in A9PII, which is adjacent to remediated, on-property A1PII and a small portion of A1PI. Field activities will be consistent with the Sitewide Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Quality Assurance Project Plan (SCQ) and Section 3.4 of the SEP. The certification sampling program, as discussed in Section 2.0 of this PSP, will be consistent with Data Quality Objectives (DQO) SL-052, Revision 3, which is included as Appendix A of this PSP.

1.3 KEY PROJECT PERSONNEL

Key project personnel responsible for performance of the project are listed in Table 1-1.

TABLE 1-1
KEY PROJECT PERSONNEL

Title	Primary	Alternate
DOE Contact	Johnny Reising	TBD
SDFP Management	Jyh-Dong Chiou	Rich Abitz
Characterization Manager	Frank Miller	Denise Arico
Field Sampling Manager	Tom Buhrlage	Jim Hey
Surveying Manager	Jim Schwing	Andy Clinton
WAO Contact	Linda Barlow	TBD
Laboratory Contact	Heather Medley	Amy Meyer
Data Management Contact	Denise Arico	Krista Blades
Data Validation Contact	James Chambers	Andy Sandfoss
Field Data Validation Contact	Dee Dee Edwards	Andy Sandfoss
FACTS/SED Database Contact	Kym Lockard	Susan Marsh
QA/QC Contact	Reinhard Friske	Mike Godber
Safety and Health Contact	Gregg Johnson	Pete Bolig/ Jeff Middaugh

FACTS – Fernald Analytical Computerized Tracking System
QA/QC – Quality Assurance/Quality Control
SDFP – Soil and Disposal Facility Project
SED – Sitewide Environmental Database
WAO – Waste Acceptance Organization

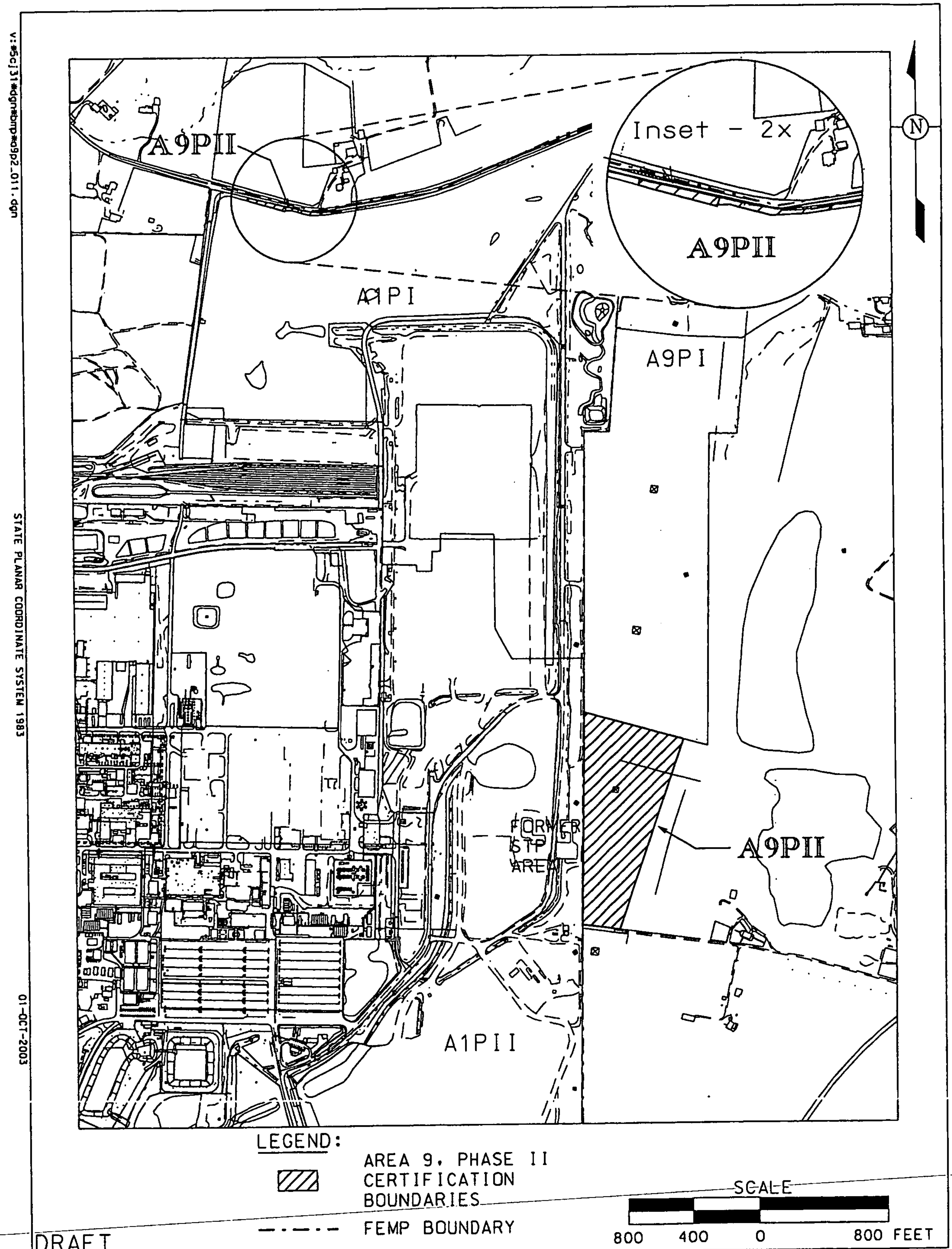


FIGURE 1-1. AREA 9, PHASE II LOCATION MAP

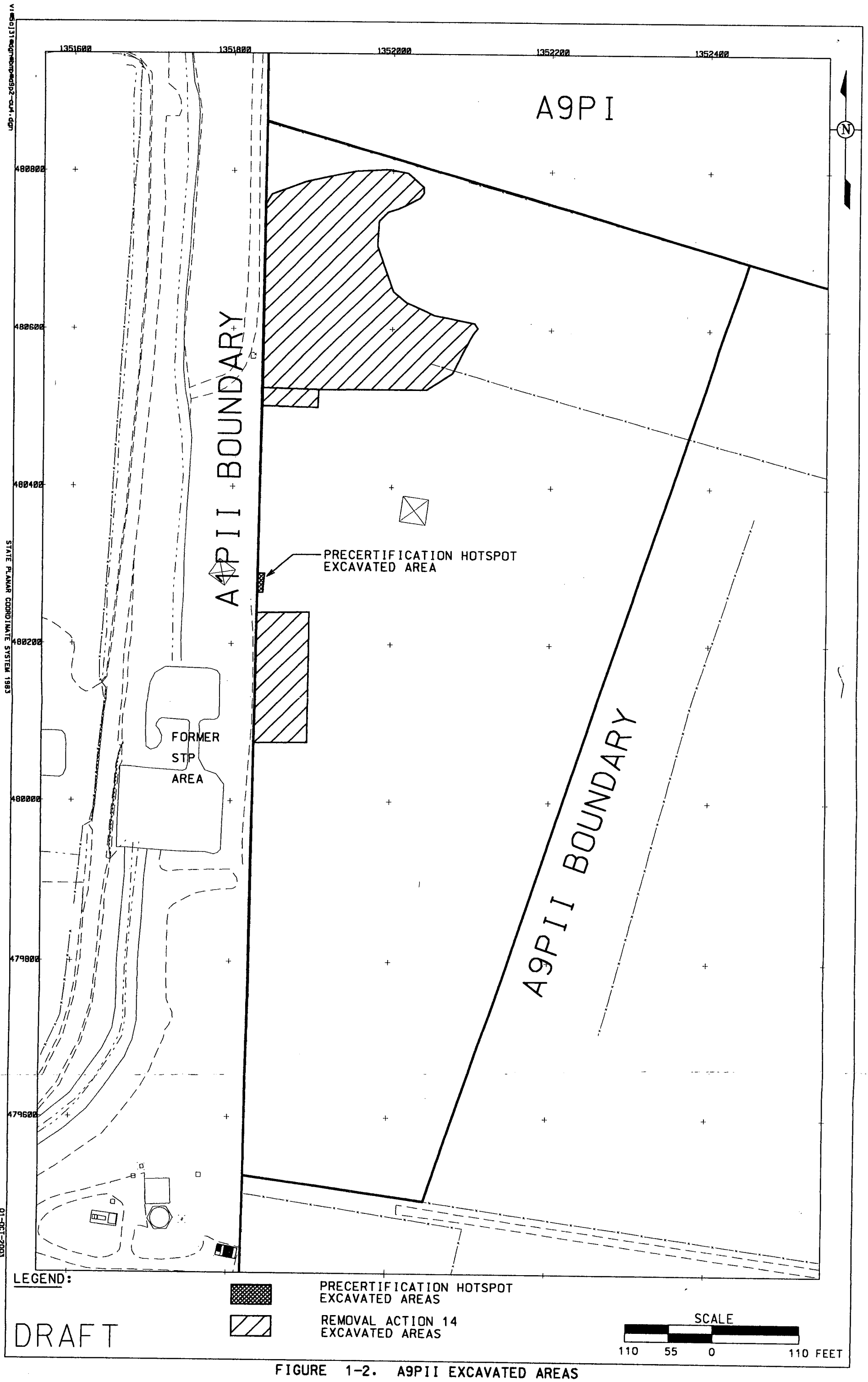


FIGURE 1-2. A9PII EXCAVATED AREAS

2.0 CERTIFICATION SAMPLING PROGRAM

2.1 CERTIFICATION DESIGN

Details and logic of the certification design are described in the A9PII Certification Design Letter (CDL). Within A9PII, eleven certification units (CUs) have been established: two Group 1 CUs north of A1PI and eight Group 1 CUs as well as one Group 2 CUs east of A1PII (It was attempted to make the one Group 2 CU into a Group 1 CU but due to the desire to keep a single CU in the wooded and uncultivated area, forced the CU to be a Group 2 based on its final size equaling 71,616 square feet which is just above the maximum allowable size of 62,500 square feet.). Each CU is divided into 16 sub-CUs. Within each sub-CU, one random certification sample location has been identified. All sample locations were tested against the minimum distance criterion as defined in the SEP within each CU. Certification sampling will consist of sample collection at the 16 selected locations, plus one field duplicate sample within each CU. The sample locations, field duplicate samples, and archive samples are identified in Appendix B.

2.2 SURVEYING

Before certification sampling activities begin, the North American Datum of 1983 (NAD83) State Planar coordinates for each selected sampling location will be surveyed and identified in the field with a flag. All locations will be field verified to ensure no surface obstacles will prevent collection at the planned location. Appendix B and Figures 2-1 and 2-2 show the tentative certification sampling locations, all of which meet the minimum distance criterion.

2.3 PHYSICAL SOIL SAMPLE COLLECTION

Certification sample collection will be conducted differently in the uncultivated area (Section 2.3.1) than in the cultivated area (Section 2.3.2) of A9PII. All samples will be collected according to procedure SMPL-01, Solids Sampling. At the discretion of the Field Sampling Lead, samples may be collected using various methods specified in SMPL-01, as long as sufficient volume is collected from the appropriate depth to perform the prescribed analyses.

Prior to the advancement of the soil borings, the field sampling technician will remove all surface vegetation within 6 inches of the locations to be sampled using a gloved hand or stainless steel trowel and taking care not to remove any of the surface soil. In order to meet the quality control requirements for duplicate field samples, twice the soil volume (a second core) will be collected at one location per CU, as identified in Appendix B. The duplicate field samples will be collected according to procedure SMPL-21,

Section 6.5, and will not be homogenized with the original sample. All samples, including duplicate field samples, will be assigned unique sample identification numbers as shown in Appendix B. The container blanks will be collected (see Section 4.1) from both the core liner and the end caps that will be used to seal it.

If a subsurface obstacle prevents sample collection at the specified location, it can be moved according to the following guidelines:

- The distance moved must be as small as possible (less than 3 feet);
- It must remain within the boundary of the same CU and sub-CU, and must still meet the minimum distance criterion;
- If the distance moved is greater than 3 feet, the move must be documented in a Variance/Field Change Notice (V/FCN), considered as significant, which will be approved by the agencies prior to collection.

Anytime a location is moved, Figure 2-1 or Figure 2-2 should be used to determine the best direction to move the point to adhere to the above guidelines. The Characterization Manager or designee should be contacted when a sample location is moved. All final sampling locations will be documented in the A9PII Certification Report.

Customer sample numbers and FACTS identification numbers will be assigned to all samples collected. The sample labels will be completed with sample collection information, and technicians will complete a Field Activity Log (FAL), a Sample Collection Log, and a Chain of Custody/Request for Analysis form in the field prior to submittal of the samples. All soil samples from a single CU with like analyses (including field duplicates) will be batched and submitted to the Sample Processing Laboratory (SPL) under one set of Chain of Custody/Request for Analysis forms which will represent one analytical release. Rinsates/container blanks will be listed on a separate Chain of Custody/Request for Analysis form. Based on historical data, precertification scan data and process knowledge, no photoionization detector survey or radiological survey will be necessary. Also, no alpha/beta screens will be required for samples to be shipped off site.

2.3.1 Sample Collection in CUs 1, 2 and 11, Uncultivated Portions of A9PII

Samples will be collected from 0 to 6-inches using 3-inch diameter, 6-inch long, plastic or stainless steel liners, or any other approved method identified in SMPL-01. The soil core shall be divided and placed

into the proper sample containers. Samples will be collected from all 16 sample locations in each CU, including one field duplicate sample. Thirteen samples from each CU (12 plus one field duplicate) will be submitted for analysis. Another push will be performed at each of the two locations within CU 2 that have been designated in Appendix B as requiring sampling for dioxin/furan analysis, and the sample material will be placed into an appropriate sample container. The four samples designated as "archive" will be stored in the event they are needed for additional analyses. Upon completion of sample collection, the 0 to 6-inch boreholes will be collapsed and no additional abandonment is necessary.

2.3.2 Sample Collection in CUs 3 through 10, Cultivated Portions of A9PII

Samples will be collected from 0 to 12-inches at all 16 locations in each CU. Samples will also be collected from 12 to 36-inches at the four sample locations designated as "archive" plus one of the remaining 12 locations which are identified in Appendix B. The field sampling team has the option of performing multiple pushes at any location to increase productivity by combining analytes. All options must be approved in writing by the Characterization Manager or designee. The thirteen 0 to 12-inch interval samples (12 plus one field duplicate) will be collected for analysis. The volatile organic compound (VOC) sample will be removed from a random location within the core and placed into the proper sample container. The remainder of the 0 to 12-inch interval will be placed into the proper sample containers. Another push will be performed at each of the locations (two per CU as designated in Appendix B) that require sampling for dioxin/furan analysis, and the sample material will be placed into an appropriate sample container. The four 0 to 12-inch samples from the locations designated as "archive" will be stored in the sample tubes sealed with end caps in the event they are needed for additional analyses. The five 12 to 36-inch interval samples from each CU will be collected for analysis and designated as baseline confirmation samples. The VOC sample will be removed, prior to homogenization, from a random location within the core and placed into the proper sample container (section K.5.1.1 of the SCQ states that samples to be analyzed for VOCs shall not be homogenized). The remainder of the 12 to 36-inch interval will be homogenized in the field in accordance with SMPL-01, and the appropriate volumes placed into the proper sample containers. Each borehole will be backfilled with the unused portion of the soil core and/or surrounding soil, as directed by the Field Sampling Lead.

2.3.3 Equipment Decontamination

Decontamination is performed to prevent the introduction of contaminants from sampling equipment to subsequent soil samples. Field Technicians will ensure that sampling equipment (core tubes and caps) has been decontaminated prior to transport to the field. As described in SMPL-01, all sampling equipment will

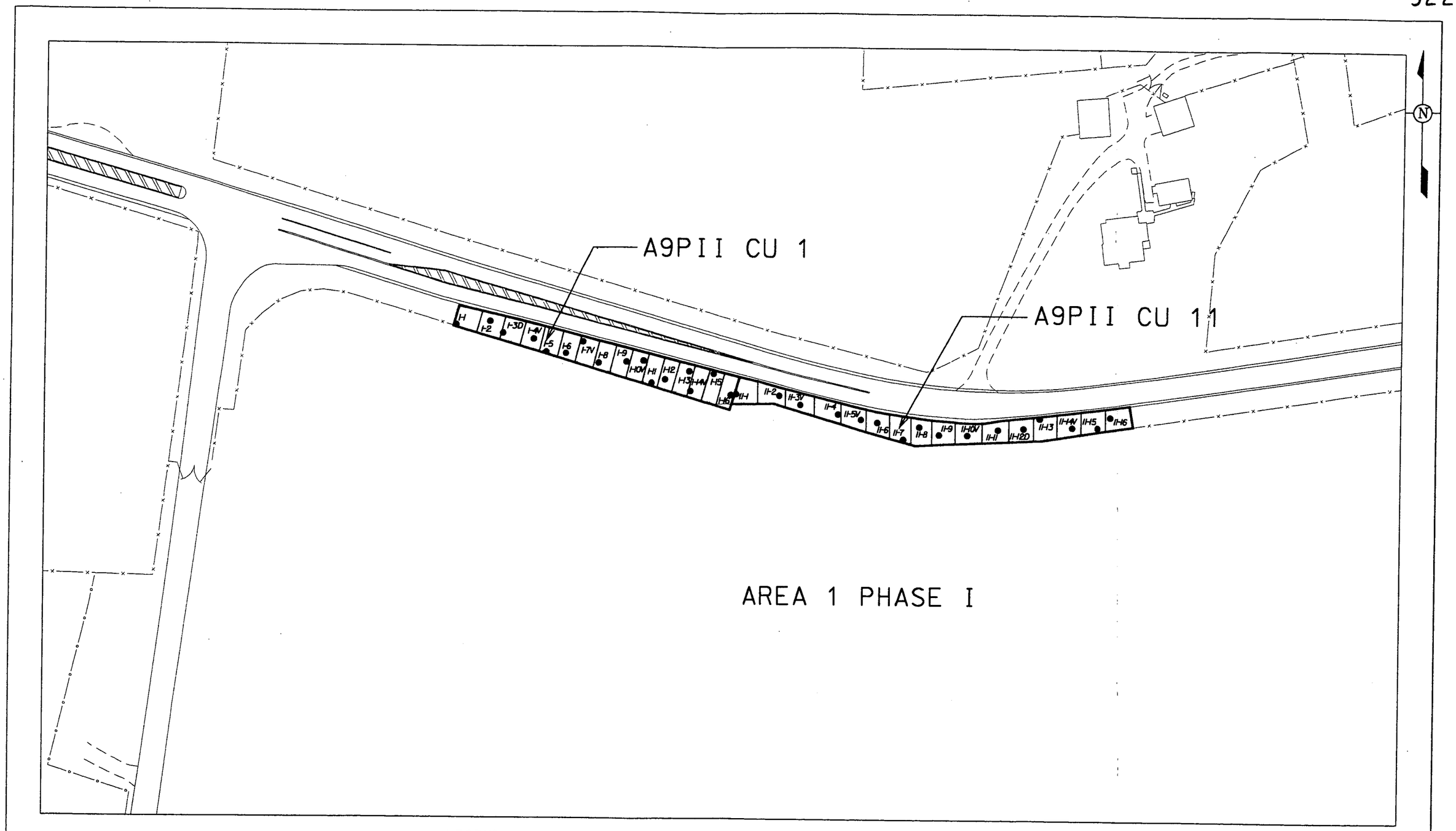
have been decontaminated before it is transported to the field site, and the 6-inch core liners will be decontaminated using the Level II (Section K.11 of the SCQ) procedure upon receipt from the manufacturer. Decontamination is also necessary in the field if sampling equipment is reused. If an alternate sampling method is used, equipment will be decontaminated between collection of sample intervals, and again after the sampling performed under this PSP is completed. Following decontamination, clean disposable wipes may be used to replace air drying of the equipment.

2.3.4 Physical Sample Identification

Each soil certification sample will be assigned a unique sample identification number as *A9P2-C#-Location^Depth Interval-Analysis-QC,* where:

A9P2	=	Sample collected from Remediation A9PII (Note that the number "2" is used in place of the roman numeral "II" in the ID for data management purposes)
C#	=	Certification sample representing certification unit from which sample was collected (numbered as C1 through C10)
Location	=	Sample Location number within each CU (1 through 16)
Depth Interval	=	"1" = 0 to 6-inch interval; "2" = 0 to 12-inch interval; "6" = 12 to 36-inch interval (where the depth interval indicator equals two times the bottom depth for the respective interval and is measured in feet, i.e., "1" = 2 x 0.5', "2" = 2 x 1', "6" = 2 x 3')
Analysis	=	"R" indicates radiological analysis; "M" indicates metals; "P" indicates aroclors; "L" indicates tetrachloroethene; DF indicates dioxins and furans; and "V" indicates archives
QC	=	Quality control sample, if applicable. A "D" indicates a field duplicate sample; "X" indicates a rinsate sample; "Y" indicates a container blank sample; "TB1" indicates the first trip blank collected, and each additional trip blank collected will be consecutively numbered.

For example, a field duplicate sample taken from the 1st sample location from CU-3 from 0 to 12-inches for radiological, metals, and aroclor analysis would be identified as A9P2-C3-1^2-RMP-D. Rinsates and container blanks will be identified as A9P2-C#^X and A9P2-C#^Y, respectively, and the analysis code will be also be added. For example, the radiological rinsate collected for CU-5 will be identified as A9P2-C5^R-X. A trip blank will be identified as A9P2-C#^TB#, and the analysis code will be added. The first trip blank collected from CU-2 will be identified as A9P2-C2^L-TB1. An example archive sample collected from the 4th sample location from CU-1 would be identified as A9P2-C1-4^1-V.



LEGEND:

——— A9PII NORTH CU BOUNDARIES

CU # II-8 SAMPLE #

● SAMPLE LOCATION

SCALE

80 40 0 80 FEET

000014

DRAFT

v:\50j31\dgn\bmp\a9p2n_006.dgn STATE PLANAR COORDINATE SYSTEM 1983 03-OCT-2003

FIGURE 2-1. A9PII NORTH OF A1PI CU AND SUB-CU BOUNDARIES AND CERTIFICATION SAMPLING LOCATIONS

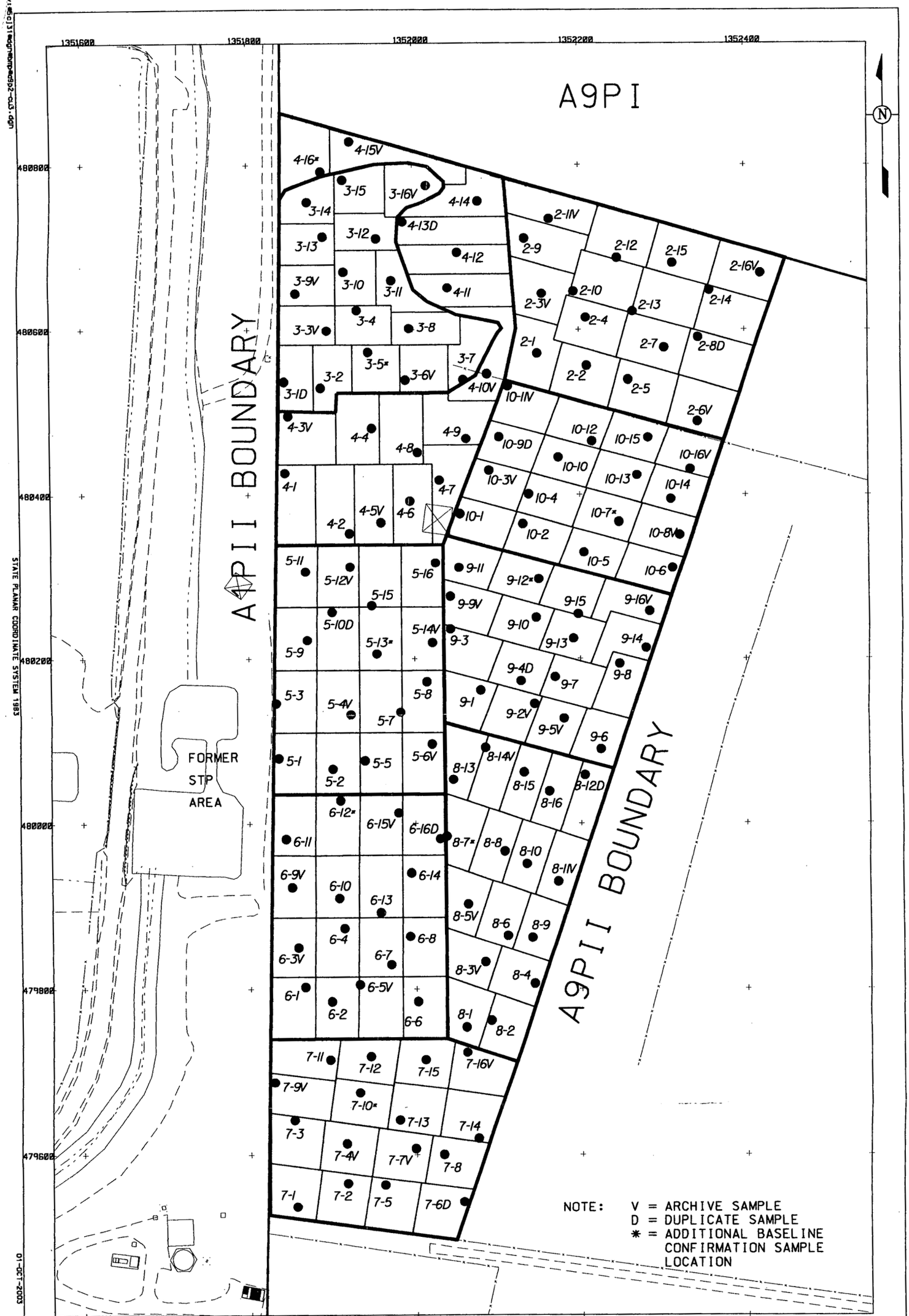


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FIGURE 2-2. A9PII EAST OF A1PII CU AND SUB CU BOUNDARIES AND CERTIFICATION SAMPLING LOCATIONS

3.0 CERTIFICATION SAMPLE ANALYSIS

All samples will be prepared for shipment to off-site laboratories per procedure 9501 Shipping Samples to Off-site Laboratories. Samples will only be shipped to off-site laboratories that are listed on the Fluor Fernald Approved Laboratories List. The sampling and analytical requirements are listed in Table 3-1.

As soon as the samples arrive at the laboratory where the analysis will take place, all samples should be prepared for analysis (including homogenization for non-VOC samples), and radiological samples should be sealed to begin the in-growth period for radium analysis. The samples submitted for dioxin/furan analysis will require a 7-day turnaround time. A 30-day turnaround time will be required for the remaining samples submitted for analysis unless otherwise stated.

The Target Analyte Lists (TAL) are shown in Table 3-2.

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TABLE 3-1
SAMPLING AND ANALYTICAL REQUIREMENTS

Analyte	Method	Sample Matrix	ASL	Preserve	Hold Time	Container [b]	Minimum Mass
Radiological (TAL A)	Gamma Spec, Alpha Spec, Liquid Scintillation or GPC	Solid	D/E[a]	Cool, 4° C	12 months	Glass	500 g (1500 g) [c]
Metals (TAL B)	ICP-AES, ICP/MS, or GFAA				6 months		
PCBs (TAL B)	GC				14 days		
Radiological (TAL E)	Gamma Spec, Alpha Spec, Liquid Scintillation or GPC	Solid	D/E[a]	Cool, 4° C	12 months	Glass	500 g (1500 g) [c]
Metals (TAL F)	ICP-AES, ICP/MS, or GFAA				6 months		
PCBs (TAL F)	GC				14 days		
VOCs (TAL C)	GC/MS	Solid	D/E[a]	Cool, 4° C	14 days	Glass with teflon-liner	20 g (60 g) [c] Fill to minimize headspace
Dioxins/Furans (TAL D)	GC or HPLC	Solid	D/E[a]	Cool, 4° C	14 days	Glass with teflon-liner	30 g (90 g)[c]
Beryllium (TAL G)	ICP-AES, ICP/MS, or GFAA	Solid	D/E[a]	Cool, 4° C	6 months	Glass or Polyethylene	15 g (45 g)[c]
Radium-228 (TAL H)	Gamma Spec	Solid	D/E[a]	None	12 months	Glass or Polyethylene	500 g (1500 g) [c]
Radiological (TALs A or E)	Gamma Spec, Alpha Spec, Liquid Scintillation or GPC	Liquid (rinsate)	D/E[a]	HNO_3 pH<2	6 months	Glass or Polyethylene	4 liters
Metals (TALs B , F or G)	ICP-AES, ICP/MS, or GFAA	Liquid (rinsate)	D/E[a]	HNO_3 pH<2	6 months	Polyethylene	1 liter
PCBs (TALs B or F)	GC	Liquid (rinsate)	D/E[a]	Cool, 4° C	7 days	Amber glass with teflon-liner	3 liters
VOCs (TAL C)	GC/MS	Liquid (trip blank/ rinsate)	D/E[a]	Cool, 4° C H_2SO_4 pH<2	14 days	3 x 40-ml glass with teflon-lined septa	120 ml (no headspace)

TABLE 3-1
(Continued)

Analyte	Method	Sample Matrix	ASL	Preserve	Hold Time	Container [b]	Minimum Mass
Dioxins/Furans (TAL D)	GC or HPLC	Liquid (rinsate)	D/E[a]	Cool , 4 ° C	7 days	Amber glass with teflon-liner	3 liters
Radium-228 (TAL H)	Gamma Spec	Liquid (rinsate) or	D/E[a]	HNO_3 pH<2	6 months	Polyethylene	4 liters
		Container Blank	D/E[a]	None	6 months	Push Tub w/ Endcaps	NA – To be completed at lab

[a]Samples will be analyzed according to Analytical Support Level (ASL) D requirements but the minimum detection level may cause some analyses to be considered ASL E.
[b]Sample container types may be changed at the direction of the Field Sampling Lead, as long as the volume requirements, container compatibility requirements, and SCQ requirements are met.
[c]At the direction of the Field Sampling Lead, triple the specified volume must be collected for all samples at one location per CU in order for the contract laboratory to perform the required quality control analysis. The samples shall be identified on the Chain of Custody/Request for Analysis forms as "designated for laboratory QC".

ICP-AES – inductively coupled plasma atomic emission spectroscopy
ICP/MS – inductively coupled plasma mass spectroscopy
GC – gas chromatography
GC/MS – gas chromatography mass spectroscopy
GFAA – graphite furnace atomic absorption
GPC – gas proportional counting
HPLC – high performance liquid chromatography

TABLE 3-2
TARGET ANALYTE LISTS

21130-PSP-0003-A
(ASL D/E[1])

Analyte	Off-Property FRL	MDL
Total Uranium	50 mg/kg	5 mg/kg
Radium-226	1.5 pCi/g	0.15 pCi/g
Radium-228	1.4 pCi/g	0.14 pCi/g
Thorium-228	1.5 pCi/g	0.15 pCi/g
Thorium-232	1.4 pCi/g	0.14 pCi/g
Technetium-99	1 pCi/g	0.5 pCi/g [2]

21130-PSP-0003-B
(ASL D/E[1])

Analyte	Off-Property FRL (BTV) [3]	MDL
Antimony	0.61 mg/kg	0.2 mg/kg [2]
Arsenic	9.6 mg/kg	0.96 mg/kg
Beryllium	0.62 mg/kg	0.062 mg/kg
Lead	400 mg/kg (200 mg/kg)	20 mg/kg
Molybdenum	13 mg/kg (10 mg/kg)	1 mg/kg
Aroclor-1254	0.04 mg/kg	0.004 mg/kg
Aroclor-1260	0.04 mg/kg	0.004 mg/kg

21130-PSP-0003-C
(ASL D/E[1])

Analyte	Off-Property FRL	MDL
Tetrachloroethene	1 mg/kg	0.1 mg/kg

21130-PSP-0003-D
(ASL D/E[1])

Analyte	Off-Property FRL (BTV) [3]	MDL
2,3,7,8-TCDD	NA	Best Achievable
1,2,3,7,8-PeCDD	NA	Best Achievable
1,2,3,4,7,8-HxCDD	NA	Best Achievable
1,2,3,6,7,8-HxCDD	NA	Best Achievable
1,2,3,7,8,9-HxCDD	NA	Best Achievable
1,2,3,4,6,7,8-HpCDD	0.00005 mg/kg or 50 ppt	5 ppt
OCDD	0.00001 mg/kg or 10 ppt	5 ppt [2]
2,3,7,8-TCDF	NA	Best Achievable
1,2,3,7,8-PeCDF	NA	Best Achievable
2,3,4,7,8-PeCDF	NA	Best Achievable
1,2,3,4,7,8-HxCDF	NA	Best Achievable
1,2,3,6,7,8-HxCDF	NA	Best Achievable
1,2,3,7,8,9-HxCDF	NA	Best Achievable
2,3,4,6,7,8-HxCDF	NA	Best Achievable
1,2,3,4,6,7,8-HpCDF	0.00005 mg/kg or 50 ppt	5 ppt
1,2,3,4,7,8,9-HpCDF	0.00005 mg/kg or 50 ppt	5 ppt
OCDF	0.00001 mg/kg or 10 ppt	5 ppt [2]

21130-PSP-0003-E[4]
(ASL D/E[1])

Analyte	On-Property FRL	MDL
Total Uranium	82 mg/kg	5 mg/kg
Radium-226	1.7 pCi/g	0.15 pCi/g
Radium-228	1.8 pCi/g	0.14 pCi/g
Thorium-228	1.7 pCi/g	0.15 pCi/g
Thorium-232	1.5 pCi/g	0.14 pCi/g
Cesium-137	1.4 pCi/g	0.082 pCi/g
Thorium-230	280 pCi/g	8.0 pCi/g

21130-PSP-0003-F [4]
(ASL D/E[1])

Analyte	On-Property FRL (BTV) [3]	MDL
Arsenic	12 mg/kg	0.96 mg/kg
Beryllium	1.5 mg/kg	0.062 mg/kg
Lead	400 mg/kg (200 mg/kg)	20 mg/kg
Manganese	4600 mg/kg	140 mg/kg
Molybdenum	2900g/kg (10 mg/kg)	1 mg/kg
Aroclor-1260	0.13 mg/kg	0.004 mg/kg

21130-PSP-0003-G
(ASL D/E[1])

Analyte	Off-Property FRL (BTV) [3]	MDL
Beryllium	0.62 mg/kg	0.062 mg/kg

21130-PSP-0003-H
(ASL D/E[1])

Analyte	On-Property FRL (BTV) [3]	MDL
Radium-228	1.8 pCi/g	0.18 pCi/g

[1] Analytical requirements will meet ASL D but the minimum detection level may cause some analyses to be considered ASL E

[2] 10 percent of the FRL is not achievable for this analyte

3 If the BTV is lower than the established FRL, the MDL shall bet set at 10 percent of the BTV

4 Based on a verbal approval from the agencies, sampling was initiated under the draft certification PSP. TALs E and F were submitted for CU1. However, as described in Section 3.2.1 of the Certification Design Letter for A9PII, only the uranium constituent is necessary to confirm that the uranium contamination does not extend off-property. These TALs remain in the PSP for documentation purposes only.

BTV – Benchmark Toxicity Value
MDL – minimum detection level
mg/kg – milligrams per kilogram
pCi/g – picoCuries per gram

4.0 QUALITY ASSURANCE/QUALITY CONTROL REQUIREMENTS

4.1 FIELD QUALITY CONTROL SAMPLES, ANALYTICAL REQUIREMENTS AND DATA VALIDATION

Per requirements of the SEP and DQO SL-052, Revision 3, the field quality control, analytical and data validation requirements are as follows:

- Field QC requirements include one field duplicate for each CU, as noted in Appendix B and Section 2.3. Field duplicate samples will be analyzed for the ASCOCs from the CU in which they were collected. Two container blanks will be collected - one before sample collection begins and one at the conclusion of sample collection for the entire A9PII area - for the push tubes. If an alternate sample collection method is used, one rinsate will be collected at a minimum frequency of one per 20 pieces of equipment reused in the field. Container blanks and/or rinsates will be analyzed for the ASCOCs from the CU in which they were collected. Trip blanks are required if VOC samples are being collected. The frequency for a trip blank is one per day or one per batch of 20 VOC samples collected, whichever is more frequent.

- All analyses will be performed at ASL D or E, where E meets the minimum detection level of 10 percent of the FRL and is above the SCQ ASL D detection level, but the analyses meet all other SCQ ASL D criteria. An ASL D data package will be provided for a minimum of 10 percent of the data, with an ASL B data package for the remaining 90 percent.

- All field data will be validated. All laboratory results will be validated to validation support level (VSL) B, and a minimum of 10 percent of the results will be validated to VSL D. All analytical data from CUs A9P2-C1, A9P2-C2, A9P2-C5, and A9P2-C11 shall be validated to VSL D. If any result is rejected during validation, the sample will be re-analyzed or an archive sample will be analyzed in its place. All data from that laboratory will be validated to VSL D for the affected CU. If necessary, this change will be documented in a V/FCN.

Once all data are validated as required, results will be entered into the SED and a statistical analysis will be performed to evaluate the pass/fail criteria for the each CU. The statistical approach is discussed in Section 3.4.3 and Appendix G of the SEP and Section 3.4.8 of the SEP Addendum.

If any sample collection or analytical methods are used that are not in accordance with the SCQ, the Project Director and Characterization Manager must determine if the qualitative data from the samples will

be beneficial to certification decision making. If the data will be beneficial, the Project Director and Characterization Manager will ensure that:

- A variance to the PSP will be written to document references confirming that the new method supports data needs,
- variations from the SCQ methodology are documented in a variance to the PSP, or
- data validation of the affected samples is requested or qualifier codes of J (estimated) and R (rejected) be attached to detected and non-detected results, respectively.

4.2 PROJECT SPECIFIC PROCEDURES, MANUALS AND DOCUMENTS

Programs supporting this work are responsible for ensuring team members work to and are trained to applicable documents. Additionally, programs supporting this work are responsible for ensuring team members in their organizations are qualified and maintain qualification for site access requirements. The Project Manager will be responsible for ensuring any project-specific training required to perform work per this PSP is conducted.

To ensure consistency and data integrity, field activities in support of the PSP will follow the requirements and responsibilities outlined in the procedures and guidance documents referenced below.

- Sitewide Excavation Plan (SEP)
- SEP Addendum
- Sitewide CERCLA Quality Assurance Project Plan (SCQ)
- 20100-HS-0002, Soil & Disposal Facility Project (SDFP) Integrated Health and Safety Plan
- SH-1006, Event Investigation and Reporting
- ADM-02, Field Project Prerequisites
- EQT-06, Geoprobe® Model 5400
- EQT-33, Real-Time Differential Global Positioning System
- SMPL-01, Solids Sampling
- SMPL-21, Collection of Field Quality Control Samples
- 9501, Shipping Samples to Off-site Laboratories
- Trimble Pathfinder Pro-XL GPS Operation Manual

4.3 INDEPENDENT ASSESSMENT

Independent assessment may be performed by the FCP QA/QC organization by conducting a surveillance, consisting of monitoring/observing on-going project activities and work areas to verify conformance to specified requirements. The surveillance will be planned and documented in accordance with Section 12.3 of the SCQ.

4.4 IMPLEMENTATION OF CHANGES

Before the implementation of changes, the Field Sampling Lead will be informed of the proposed changes. Once the Field Sampling Lead has obtained written or verbal approval (electronic mail is acceptable) from the Characterization Manager and QA/QC for the changes to the PSP, the changes may be implemented. Changes to the PSP will be noted in the applicable FALs and on a V/FCN. QA/QC must receive the completed V/FCN, which includes the signatures of the Characterization and Sampling Managers, Project Director, and QA/QC within seven days of implementation of the change. The U.S. Environmental Protection Agency and Ohio Environmental Protection Agency will be given a 15-day review period prior to implementing the change(s) for any V/FCNs identified as "significant" per SDFP guidelines.

5.0 HEALTH AND SAFETY

Technicians will schedule a project walkdown with Health and Safety (Radiological Control, Industrial Hygiene, and Safety) and any other groups that may be working in the same or an adjacent area before the start of the project. Weekly walkdowns will be conducted throughout the course of the project in accordance with SPR 1-10, Safety Walk-Throughs. All work on this project will be performed according to applicable Environmental Monitoring procedures, the documents identified in Section 3.4, Fluor Fernald work permit, Radiological Work Permit, and other applicable permits as determined by project management. Concurrence with applicable safety permits is required by each technician in the performance of their assigned duties. A job/safety briefing will be conducted before field activities begin each day; the project lead or designee will document the briefing on form FS-F-2955. Personnel will also be briefed on any health and safety documents (such as Travelers) that may apply to the project work scope.

Technicians will be provided with 2-way radios or cell phones for all remote locations. The Technician or designee will have direct radio communication with Fluor Fernald Communication. This communication will be provided by FCP site radios or cell phones. This will ensure timely notification of site emergencies and severe weather.

- To report emergencies by site phone, dial 911.
- To report by cellular phone, dial 648-6511 and ask for CONTROL.
- To report by Radio call "CONTROL" or "202".

6.0 DISPOSITION OF WASTE

During sampling activities, field personnel may generate small amounts of soil, water, and contact waste. Excess soil generated during sample collection will be replaced in the borehole. Contact waste generation will be minimized by limiting contact with sample media, and by only using disposable materials that are necessary. Contact waste will be bagged and brought back to site for disposal in an uncontrolled area dumpster. Generation of decontamination waters will be minimized in the field. Decontamination water that is generated will be contained in a plastic bucket with a lid and returned to site for disposal. A wastewater discharge form must be completed for disposal. On-site decontamination of equipment will take place at a facility that discharges to the Advanced Wastewater Treatment Facility, either directly or indirectly, through the storm water collection system.

Following analysis, remaining soil will be returned to A9PII and spread at the point of origin (i.e., sampling location), if possible. If access restrictions prevent this, the WAO contact should be consulted for disposition options. WAO should also be consulted in the event that additional significant waste volumes are generated.

7.0 DATA MANAGEMENT

A data management process will be implemented so information collected during the investigation will be properly managed to satisfy data end use requirements after completion of field activities. As specified in Section 5.1 of the SCQ, sampling teams will describe daily activities on a FAL, which should be sufficiently detailed for accurate reconstruction of the events without reliance on memory. Sample Collection Logs will be completed according to protocols specified in Appendix B of the SCQ and in applicable procedures. These forms will be maintained in loose-leaf form and uniquely numbered following the sampling event.

All field measurements, observations, and sample collection information associated with physical sample collection will be recorded, as applicable, on the Sample Collection Log, the FAL, the Chain of Custody/Request for Analysis form, the Lithologic Log, and Borehole Abandonment Record. The PSP number will be on all documentation associated with these sampling activities.

Samples will be assigned a unique sample number as explained in Section 2.3 and listed in Appendix B. This unique sample identifier will appear on the Sample Collection Log and Chain of Custody/Request for Analysis form and will be used to identify the samples during analysis, data entry, and data management.

Technicians will review all field data for completeness and accuracy then forward the field data package to the Field Data Validation Contact for final QA/QC review. Analytical data will be entered into FACTS by Sample Data Management personnel. Analytical data that is designated for data validation will be forwarded to the Data Validation Group. The PSP requirements for analytical data validation are outlined in Section 4.1. Analytical data will be reviewed by the Data Management Lead upon receipt from the off-site laboratories.

Following field and analytical data validation, the Sample Data Management organization will perform data entry into the SED. The original field data packages, original analytical data packages, and original documents generated during the validation process will be maintained as project records by the Sample Data Management organization.

To ensure that correct coordinates and survey information are tied to the final sample locations in the database, the following process will take place. Upon surveying all locations identified in the PSP, the

Surveying Manager will provide the Data Management Lead (i.e., SDFP Characterization) with an electronic file of all surveyed coordinates and surface elevations. The Sampling Manager will provide the Data Management Lead with a list of any locations that must be moved during penetration permitting or collection, and the Data Management Lead will update the electronic file with this information. After sample collection is complete, the Data Management Lead will provide this electronic file to the Database Contact for uploading to SED.

APPENDIX A

DATA QUALITY OBJECTIVES SL-052, REV. 3

Control Number _____

Fernald Environmental Management Project

Data Quality Objectives

Title: Sitewide Certification Sampling and Analysis

Number: SL-052

Revision: 3

Effective Date: March 13, 2000

Contact Name: Mike Rolfes

Approval: _____ Date: 3/13/00
James Chambers
DQO Coordinator

Approval: _____ Date: 3/13/00
J.D. Chiou
SCEP Project Director

Rev. #	0	1	2	3			
Effective Date:	4/28/99	6/10/99	2/3/00	3/13/00			

DATA QUALITY OBJECTIVES
Sitewide Certification Sampling and Analysis

Members of Data Quality Objectives (DQO) Scoping Team

The members of the scoping team included individuals with expertise in QA, analytical methods, field sampling, statistics, laboratory analytical methods and data management.

Conceptual Model of the Site

Soil sampling was conducted at the Fernald Environmental Management Project (FEMP) during the Operable Unit 5 (OU5) Remedial Investigation/Feasibility Study (RI/FS). Final Remediation Levels (FRLs) for constituents of concern (COCs), along with the extent of soil contaminated above the FRLs, were identified in the OU5 Record of Decision (ROD). Actual soil remediation activities now fall under the guidance of the final Sitewide Excavation Plan (SEP).

As outlined in the SEP, the FEMP has been divided into individual Remediation Areas (or phased areas within a Remediation Area) to sequentially carry out soil remedial activities. Under the strategy identified in the SEP, pre-design investigations are first conducted to better define the limits of soil excavation requirements. Following any necessary excavation, pre-certification real-time scanning activities are conducted to evaluate residual patterns of soil contamination. Pre-certification scan data should provide a level of assurance that the FRLs will be achieved. When pre-certification data indicate that remediation goals are likely to be met, they are used to define certification units (CUs) within the Remediation Area of interest. Table 2-9 of the final SEP identifies a list of area-specific COCs (ASCOCs) for each Remediation Area at the FEMP. Based on existing data and production knowledge, a subset of these ASCOCs are conservatively identified within each CU as potentially present in the CU. This suite of CU-specific COCs is the subset of the ASCOCs to be evaluated against the FRLs within that CU. At a minimum, the five primary radiological COCs (total uranium, radium-226, radium-228, thorium-228, thorium-232) will be retained as CU-specific COCs for certification of each CU.

Delineation and justification for the final CU boundaries, along with each corresponding suite of CU-specific ASCOCs is documented in a Certification Design Letter. Upon approval of the Certification Design Letter by the EPA, certification activities can begin. Section 3.4 of the final SEP presents the general certification strategy.

1.0 Statement of Problem

FEMP soil and potentially impacted adjacent off-property soil must be certified on a CU by CU basis for compliance with the FRLs of all CU-specific ASCOCs. The appropriate sampling, analytical and information management criteria must be developed to provide the required qualified data necessary to demonstrate attainment of certification statistical criteria. For every area undergoing certification, a sampling plan must be in place that will direct soil samples to be collected which are representative of the CU-specific COC concentrations within the framework of the certification approach identified in the final SEP. The appropriate analytical methodologies must be selected to provide the required data.

Exposure to Soil

The cleanup standards, or FRLs, were developed for a final site land use as an undeveloped park. Under this exposure scenario, receptors could be directly exposed to contaminated soil through dermal contact, external radiation, incidental ingestion, and/or inhalation of fugitive dust while visiting the park. Exposure to contaminated soil by the modeled receptor is expected to occur at random locations within the boundaries of the FEMP and would not be limited to any single area. Some soil FRLs were developed based on the modeled cross-media impact potential of soil contamination to the underlying aquifer. In these instances, potential exposure to contaminants would be indirect through the groundwater pathway, and not directly linked to soil exposure. Off-site soil FRLs were established at more conservative levels than the on-property soil FRLs, based on an agricultural receptor. Benchmark Toxicity Values (BTVs) are also being considered in the cleanup process by assessing habitat impact of individual BTVs under post-remedial conditions.

Available Resources

Time: Certification sampling will be accomplished by the field sampling team prior to interim or final regrading or release of soil for construction activities. The certification sampling schedule must allow sufficient time, in the event additional remediation is required, to demonstrate certification of FRLs prior to permanent construction or regrading. Certification sampling will have to be completed and analytical results validated and statistical analysis completed prior to submission of a Certification Report to the regulatory agencies.

Project Constraints: Certification sampling and analytical testing must be performed with existing manpower, materials and equipment to support the certification effort. Remediation areas are prioritized for certification sampling and analysis according to the date required for initiation of sequential construction activities in those areas. Fluor Daniel Fernald (FDF) and DOE must demonstrate post-remedial compliance with the CU-specific COC FRLs to release the designated Remediation Area for

planned interim grading, eventual restoration under the Natural Resources Restoration Plan (NRRP), and other final land use activities.

2.0 Identify the Decision

Decision

Demonstrate within each CU if all CU-specific COCs pass the certification criteria. These criteria are as follows: 1) The average concentration of each CU-specific COC is below the FRL and within the agreed upon confidence limits (95% for primary ASCOCs and 90% for secondary ASCOCs); and 2) the hot-spot criteria, that no result for any CU-specific COC is more than two times the associated soil FRL. The certification criteria are discussed in greater detail in Section 3.4.4 of the final SEP.

Possible Results

1. The average concentration of each CU-specific COC is demonstrated to be below the FRLs within the confidence level, with no single result for any CU-specific COC greater than two times the associated FRL. The CU can then be certified as attaining remediation goals.

2. The average concentration of at least one CU-specific COC is demonstrated to be above the FRL at the given confidence level. The CU will fail certification and require additional remedial action, per Section 3.4.5 of the final SEP.

3. If a result(s) of one or more CU-specific COC is demonstrated to be at or above two times the FRL, the CU will fail certification. The CU will fail certification and require additional remedial action per Section 3.4.5 of the final SEP. A combination of results 2 and 3 also constitutes certification failure.

3.0 Inputs That Affect the Decision

Required Information

Certification data will be obtained through physical soil sampling. Based on the certification analytical results, the average concentrations of each CU-specific COC with specified confidence levels will be calculated using the statistical methods identified in Appendix G of the final SEP.

Source of Information

Per the SEP, analysis of certification samples for each CU-specific COC will be conducted at analytical support level (ASL) D in accordance with methods and QA/QC standards in the FEMP Sitewide CERCLA Quality Assurance Project Plan [SCQ].

Contaminant-Specific Action Levels
The cleanup levels are the soil FRLs published in the OU5 and OU2 RODs. BTVs being considered in the remediation process are discussed for consideration during certification in Appendix C of the NRRP.

Methods of Sampling and Analysis
Physical soil samples will be collected in accordance with the applicable site sampling procedures. Per the SEP, laboratory analysis will be conducted at ASL D using QA/QC protocols specified in the SCQ. Full raw data deliverables will be required from the laboratory to allow for appropriate data validation. For FEMP-approved on- and off-site laboratories, the analytical method used will meet the required precision, accuracy and detection capabilities necessary to achieve FRL analyte ranges.

4.0 The Boundaries of the Situation

Spatial Boundaries
Domain of the Decision: The boundaries of this certification DQO extend to all surface, stockpile and fill soil in areas that are undergoing certification as part of FEMP remediation.

Population of Soil: Soil includes all excavated surfaces, undisturbed relatively unimpacted native soil, and sub-surface intervals (stockpile or fill areas only) in areas undergoing certification sampling and analysis.

Scale of Decision Making
Based on considerations of the final certification units and the COC evaluation process, the CU-specific COCs are determined. The area undergoing certification will be evaluated on a CU basis, based on physical sample results, as to whether it has passed or failed the criteria for attainment of certification (final SEP Section 3.4.4).

Temporal Boundaries
Time frame: Certification sampling must be performed in time to sequentially release certified areas for scheduled interim grading, restoration, and other final land use activities. Certification sampling data received from the laboratory will be validated and statistically evaluated. Certification results and findings will be documented in Certification Reports, which must be submitted to and approved by the regulatory agencies prior to release of the areas for scheduled interim grading, restoration, and other final land use activities.

Practical Considerations: Some areas undergoing remediation will not be accessible for certification sampling until decontamination/demolition and remedial excavation activities are complete. Other areas, such as wood lots, that are relatively uncontaminated and not planned for excavation, may require preparation, such as cutting of grass or removal of undergrowth prior to certification sampling, thus requiring coordination with FEMP Maintenance personnel.

5.0 Decision Rule

Successful certification of soil within the boundaries of a certification unit (CU) demonstrates that the certified soil (surface or subsurface) has concentrations of CU-specific COC(s) that meet the established criteria for attainment of Certification.

Parameters of Interest

The parameters of interest are the individual and average surface soil concentrations of CU-specific COCs and confidence limits on the calculated average within a CU. OU2 and OU5 ROD identify all applicable soil FRLs. The SEP identifies the ASCOCs, a subset of which will be used to establish CU-specific COCs within each Remediation Area undergoing certification sampling and analysis.

Action Levels

The applicable action levels are the on- and off-property soil FRLs published in the OU5 or OU2 ROD for each ASCOC.

Decision Rules

If the average concentration for each CU-specific COC is demonstrated to be below the FRLs within the agreed upon confidence level (95% for primary COCs; 90% for secondary COCs), and no analytical result exceeds two times the soil FRL, then the CU can be certified as complying with the cleanup criteria. If a CU does not meet the FRLs within the agreed upon confidence level for one or more CU-specific COCs, or one or more analytical results for one or more CU-specific COCs is greater than two times the associated soil FRL, then the CU fails certification and requires further assessment as per the SEP.

6.0 Limits on Decision Errors

Types of Decision Errors and Consequences

Definition

Decision Error 1: This decision error occurs when the decision maker decides that a CU has met the certification criteria, when in reality, the certification criteria have not been met. This situation could result in an increased risk to human health and the environment. In addition, this type of error could result in regulatory fees and penalties.

Decision Error 2: This decision error occurs when the decision maker decides a CU does not met the certification criteria, when actually, the certification criteria have been met. This error would result in unnecessary added costs due to the excavation of soil containing COC concentrations below their FRLs, and an increased volume of soil assigned to the OSDF. In addition, unnecessary delays in the remediation schedule may result.

True State of Nature for the Decision Errors

The true state of nature for Decision Error 1 is that the certification criteria are not met (average CU-specific COC concentrations not below the FRL within the specified confidence limits; or a single sample result above two times the FRL). The true state of nature for Decision Error 2 is that certification criteria are met (average CU-specific COC concentrations are below the FRL within the specified confidence limits, and no result is above two times the FRL). Decision Error 1 is the more severe error due to the potential threat this poses to human health and the environment.

Null Hypothesis

H_0: The average concentration of at least one CU-specific COC within a CU is equal to or greater than the associated FRL.

H_1: The average concentration of all CU-specific COCs within a CU is less than the action levels.

False Positive and False Negative Errors

A false positive is Decision Error 1: less than or equal to five percent ($p = .05$) is considered the acceptable decision error in determination of compliance with FRLs for primary ASCOCs, while ten percent ($p = .10$) is acceptable for secondary ASCOCs.

A false negative is Decision Error 2: less than or equal to 20 percent is considered the acceptable decision error. This decision error is controlled through the determination of sample sizes (see Section G.1.4.1 of the final SEP).

7.0 Design for Obtaining Quality Data

Section 3.4.2 of the final SEP presents the specifics of the certification sampling design. The following text describes the general certification sampling design.

Soil Sample Locations

In order to select certification sampling locations, each CU is divided into 16 approximately equal sub-CUs. Certification sample locations are then generated by randomly selecting an easting and northing coordinate within the boundaries of each cell. Additional alternative sample locations are also generated in case the original random sample location fails the minimum distance criterion. The minimum distance criterion is defined as the minimum distance allowed between random sample locations in order to eliminate the chance of random sample points clustering within a small area. This clustering would tend to over emphasize a small area and, conversely, under represent a large area in certification determination. By not allowing sample locations to be too closely arranged, the sample locations are spread out and provide a more uniform coverage, thus reducing the possibility of large unsampled areas. The equation for determining minimum distance criterion is presented in Section 3.4.2.1 of the SEP.

In the event that the original random sample location failed the minimum distance criterion, the first alternate location was selected and all the locations were retested. This process continued until all 16 random locations passed the minimum distance criteria.

Each CU is also divided into four quadrants, each of which contains 4 sub-CUs and 4 sample locations. Three of the four locations per quadrant (12 per CU) are then selected for sample collection and analysis. The other one per quadrant (4 per CU) are designated as "archives", and samples will not be collected and analyzed unless need arises due to analytical or validation problems warrant. Per Section 3.4.2 of the SEP, as few as 8 samples may be collected from Group 2 CUs for analysis of secondary COCs.

Physical Samples

Physical soil certification samples will be collected from the surface according to SMPL-01 at locations identified in the PSP (generally 12 of the 16 locations per CU).

If stockpiled soil is to be certified, two CUs will be established, on for the stockpile and one for the underlying soil (i.e., the "footprint"). To certify the stockpile, samples will be collected from predetermined random intervals from within the stockpiled soil at each certification sampling location identified in the PSP. To certify the footprint, the first 6-inches of native soil present at each sampling location will also be collected for certification. If fill soil is to be certified, the strategy (surface or sampling at depth) will be based on results from the precertification scan of the fill area(s), as discussed in the Certification Design Letter and the certification PSP.

Laboratory Analysis

As defined in the PSP, a minimum of 8 to 12 samples per CU will be submitted to the on-site laboratory or a FDF approved off-site laboratory for analysis. All certification analyses will meet ASL D requirements per the SCQ except for the HAMDC. Samples will be analyzed for all CU-specific ASCOCs, with minimum detection levels set according to the SCQ and applicable project guidelines.

Validation

All field data will be validated. Also, a minimum of 10 percent of the analytical data from each laboratory will be subject to analytical validation to ASL D requirements in the SCQ, and will require an ASL D package. The remaining analytical data will be validated to a minimum of ASL B, and will require an ASL B package.

8.0 Use of Data to Test Null Hypothesis

Appendix G of the final SEP discusses in detail, the statistical evaluations of certification data used to determine attainment of certification criteria.

Data Quality Objectives
Sitewide Certification Sampling and Analysis

1A. Task Description:

1B. Project Phase: (Put an X in the appropriate selection.)

RI☐ FS☐ RD☐ RA☒ RvA☐ Other (specify) _____

1C. DQO No.: SL-052, Rev. 2 DQO Reference No.: _____

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2. Media Characterization: (Put an X in the appropriate selection.)

Air☐ Biological☐ Groundwater☐ Sediment☒ Soil☒
Waste☐ Wastewater☐ Surface Water☐ Other (specify) _____

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3. Data Use with Ananlytical Support Level (A-E): (Put an X in the appropriate Analytical Support Level selection(s) beside each applicable data use)

Site Characterization	Risk Assessment
A☐ B☐ C☐ D☐ E☐	A☐ B☐ C☐ D☐ E☐
Evaluation of Alternatives	Engineering Design
A☐ B☐ C☐ D☐ E☐	A☐ B☐ C☐ D☐ E☐
Monitoring During Remediation	Other
A☐ B☐ C☐ D☐ E☐	A☐ B☐ C☐ D☒ E☐

4A. Drivers: Remediation Area Remedial Action Work Plans, Applicable or Relevant and Appropriate Requirements (ARARs) and Operable Unit 2 and Operable Unit 5 Records of Decision (ROD), Sitewide Excavation Plan (SEP).

4B. Objective: Confirmation that remediation areas at the FEMP, or adjacent off-property areas, have met certification criteria on a CU by CU basis.

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5. Site Information (Description):

The OU2 and OU5 RODs have identified areas at the FEMP that require soil remediation activities. The RODs specify that the soil in these areas will be demonstrated to be below the FRLs. Certification is necessary for all FEMP soil and some adjacent off-property soil to demonstrate that the residual soil does not contain COC contamination exceeding the FRL at a specified confidence level.

6A. Data Types with appropriate Analytical Support Level Equipment Selection and SCQ Reference: (Place an "X" to the right of the appropriate box or boxes selecting the type of analysis or analyses required. Then select the type of equipment to perform the analysis if appropriate. Please include a reference to the SCQ Section.)

1. pH	☐	2. Uranium	☒*	3. BTX	☐
Temperature	☐	Full Radiological	☒*	TPH	☐
Specific Conductance	☐	Metals	☒*	Oil/Grease	☐
Dissolved Oxygen	☐	Cyanide	☐		
Technetium-99	☒*	Silica	☐		
4. Cations	☐	5. VOA	☒*	6. Other (specify)	
Anions	☐	BNA	☐		
TOC	☐	PEST	☒*		
TCLP	☐	PCB	☒*		
CEC	☐	COD	☐		

* As identified in the area certification PSP

6.B. Equipment Selection and SCQ Reference:

Equipment Selection	Refer to SCQ Section
ASL A _____	SCQ Section _____
ASL B _____	SCQ Section _____
ASL C _____	SCQ Section _____
ASL D Per SCQ and PSP	SCQ Section Appendix G, Tbls. 1&3
ASL E Per PSP	SCQ Section Appendix H (final)

7A. Sampling Methods: (Put an X in the appropriate selection.)

Biased☐ Composite☐ Grab☒ Environmental☐ Grid☐
Intrusive☒ Non-Intrusive☐ Phased☐ Source☐ Random☒*
*Systematic random samples, selected one per cell and meeting the minimum distance criterion

7B. Sample Work Plan Reference: Project Specific Plan for the associated Remediation area Remedial Action Work Plan

Background samples: OU5 RI

7C. Sample Collection Reference: Associated PSP(s), SMPL-01

8. Quality Control Samples: (Put an X in the appropriate selection.)

8A. Field Quality Control Samples:

Trip Blanks	☒[1]	Container Blanks	☒
Field Blanks	☒[2]	Duplicate Samples	☒
Equipment Rinsate Blanks	☒	Split Samples	☒[3]
Preservative Blanks	☐	Performance Evaluation Samples	☐

Other (specify) _____

1) Collected for volatile organic sampling
2) As noted in the PSP
3) Split samples will be taken where required by the EPA

8B. Laboratory Quality Control Samples:

Method Blank	☒	Matrix Duplicate/Replicate	☒
Matrix Spike	☒	Surrogate Spikes	☒
Tracer Spike	☒	Other (specify) _____	

9. Other: Please identify any other germane information that may impact the data quality or gathering of this particular objective, task, or data use.

Sample density will be dependent upon the CU size (Group 1 [250'x250'] or Group 2 [500'x500']), as determined by historical and pre-certification scan data.

APPENDIX B

SAMPLE LOCATION AND IDENTIFIERS

APPENDIX B
SAMPLE LOCATION AND IDENTIFIERS

CU	LOCATION	DEPTH	SAMPLE ID	ANALYSIS	EAST-83	NORTH-83
1	1-1	0" - 6"	A9P2-C1-1^1-RMP	TAL E,F	1349760	484118
	1-2	0" - 6"	A9P2-C1-2^1-RMP	TAL E,F	1349789	484121
	1-3D	0" - 6"	A9P2-C1-3^1-RMP	TAL E,F	1349800	484111
		0" - 6"	A9P2-C1-3^1-RMP-D	TAL E,F		
	1-4V	0" - 6"	A9P2-C1-4^1-V	ARCHIVE	1349826	484106
	1-5	0" - 6"	A9P2-C1-5^1-RMP	TAL E,F	1349837	484095
	1-6	0" - 6"	A9P2-C1-6^1-RMP	TAL E,F	1349854	484094
	1-7V	0" - 6"	A9P2-C1-7^1-V	ARCHIVE	1349869	484104
	1-8	0" - 6"	A9P2-C1-8^1-RMP	TAL E,F	1349883	484086
	1-9	0" - 6"	A9P2-C1-9^1-RMP	TAL E,F	1349907	484087
	1-10V	0" - 6"	A9P2-C1-10^1-V	ARCHIVE	1349922	484088
	1-11	0" - 6"	A9P2-C1-11^1-RMP	TAL E,F	1349929	484069
	1-12	0" - 6"	A9P2-C1-12^1-RMP	TAL E,F	1349941	484072
	1-13	0" - 6"	A9P2-C1-13^1-RMP	TAL E,F	1349962	484079
	1-14V	0" - 6"	A9P2-C1-14^1-V	ARCHIVE	1349963	484062
	1-15	0" - 6"	A9P2-C1-15^1-RMP	TAL E,F	1349983	484077
	1-16	0" - 6"	A9P2-C1-16^1-RMP	TAL E,F	1349998	484059

*Denotes locations in CU-3 through CU-10 where addt'l baseline confirmation samples will be collected in addition to the archive locations.

APPENDIX B
SAMPLE LOCATION AND IDENTIFIERS

CU	LOCATION	DEPTH	SAMPLE ID	ANALYSIS	EAST-83	NORTH-83
2	2-1	0" - 6"	A9P2-C2-1^1-RMP	TAL A, B	1352150	480571
		0" - 6"	A9P2-C2-1^1-L	TAL C		
	2-2	0" - 6"	A9P2-C2-2^1-RMP	TAL A, B	1352210	480556
		0" - 6"	A9P2-C2-2^1-L	TAL C		
	2-3V	0" - 6"	A9P2-C2-3^1-V	ARCHIVE	1352156	480644
	2-4	0" - 6"	A9P2-C2-4^1-RMP	TAL A, B	1352209	480615
		0" - 6"	A9P2-C2-4^1-L	TAL C		
	2-5	0" - 6"	A9P2-C2-5^1-RMP	TAL A, B	1352260	480540
		0" - 6"	A9P2-C2-5^1-L	TAL C		
		0" - 6"	A9P2-C2-5^1-DF	TAL D		
	2-6V	0" - 6"	A9P2-C2-6^1-V	ARCHIVE	1352343	480490
	2-7	0" - 6"	A9P2-C2-7^1-RMP	TAL A, B	1352303	480577
		0" - 6"	A9P2-C2-7^1-L	TAL C		
	2-8D	0" - 6"	A9P2-C2-8^1-RMP	TAL A, B	1352344	480590
		0" - 6"	A9P2-C2-8^1-L	TAL C		
		0" - 6"	A9P2-C2-8^1-RMP-D	TAL A, B		
		0" - 6"	A9P2-C2-8^1-L-D	TAL C		
	2-9	0" - 6"	A9P2-C2-9^1-RMP	TAL A, B	1352136	480711
		0" - 6"	A9P2-C2-9^1-L	TAL C		
	2-10	0" - 6"	A9P2-C2-10^1-RMP	TAL A, B	1352194	480647
		0" - 6"	A9P2-C2-10^1-L	TAL C		
		0" - 6"	A9P2-C2-10^1-DF	TAL D		
	2-11V	0" - 6"	A9P2-C2-11^1-V	ARCHIVE	1352165	480734
	2-12	0" - 6"	A9P2-C2-12^1-RMP	TAL A, B	1352247	480687
		0" - 6"	A9P2-C2-12^1-L	TAL C		
	2-13	0" - 6"	A9P2-C2-13^1-RMP	TAL A, B	1352266	480622
		0" - 6"	A9P2-C2-13^1-L	TAL C		
	2-14	0" - 6"	A9P2-C2-14^1-RMP	TAL A, B	1352358	480648
		0" - 6"	A9P2-C2-14^1-L	TAL C		
	2-15	0" - 6"	A9P2-C2-15^1-RMP	TAL A, B	1352314	480681
		0" - 6"	A9P2-C2-15^1-L	TAL C		
	2-16V	0" - 6"	A9P2-C2-16^1-V	ARCHIVE	1352420	480669

*Denotes locations in CU-3 through CU-10 where addt'l baseline confirmation samples will be collected in addition to the archive locations.

APPENDIX B
SAMPLE LOCATION AND IDENTIFIERS

CU	LOCATION	DEPTH	SAMPLE ID	ANALYSIS	EAST-83	NORTH-83
3	3-1D	0" - 12"	A9P2-C3-1^2-RMP	TAL A, B	1351845	480537
		0" - 12"	A9P2-C3-1^2-L	TAL C		
		0" - 12"	A9P2-C3-1^2-RMP-D	TAL A, B		
		0" - 12"	A9P2-C3-1^2-L-D	TAL C		
	3-2	0" - 12"	A9P2-C3-2^2-RMP	TAL A, B	1351889	480530
		0" - 12"	A9P2-C3-3^2-L	TAL C		
		0" - 12"	A9P2-C3-3^2-DF	TAL D		
	3-3V	0" - 12"	A9P2-C3-3^2-V	ARCHIVE	1351897	480599
		12" - 36"	A9P2-C3-3^6-RMP	TAL A, B		
		12" - 36"	A9P2-C3-3^6-L	TAL C		
	3-4	0" - 12"	A9P2-C3-4^2-RMP	TAL A, B	1351933	480624
		0" - 12"	A9P2-C3-4^2-L	TAL C		
	3-5 *	0" - 12"	A9P2-C3-5^2-RMP	TAL A, B	1351946	480572
		0" - 12"	A9P2-C3-5^2-L	TAL C		
		12" - 36"	A9P2-C3-5^6-RMP	TAL A, B		
		12" - 36"	A9P2-C3-5^6-L	TAL C		
	3-6V	0" - 12"	A9P2-C3-6^2-V	ARCHIVE	1351991	480539
		12" - 36"	A9P2-C3-6^6-RMP	TAL A, B		
		12" - 36"	A9P2-C3-6^6-L	TAL C		
	3-7	0" - 12"	A9P2-C3-7^2-RMP	TAL A, B	1352061	480540
		0" - 12"	A9P2-C3-7^2-L	TAL C		
	3-8	0" - 12"	A9P2-C3-8^2-RMP	TAL A, B	1351996	480601
		0" - 12"	A9P2-C3-8^2-L	TAL C		
	3-9 V	0" - 12"	A9P2-C3-9^2-V	ARCHIVE	1351859	480645
		12" - 36"	A9P2-C3-9^6-RMP	TAL A, B		
		12" - 36"	A9P2-C3-9^6-L	TAL C		
	3-10	0" - 12"	A9P2-C3-10^2-RMP	TAL A, B	1351917	480671
		0" - 12"	A9P2-C3-10^2-L	TAL C		
	3-11	0" - 12"	A9P2-C3-11^2-RMP	TAL A, B	1351975	480660
		0" - 12"	A9P2-C3-11^2-L	TAL C		
	3-12	0" - 12"	A9P2-C3-12^2-RMP	TAL A, B	1351957	480711
		0" - 12"	A9P2-C3-12^2-L	TAL C		
	3-13	0" - 12"	A9P2-C3-13^2-RMP	TAL A, B	1351892	480713
		0" - 12"	A9P2-C3-13^2-L	TAL C		
		0" - 12"	A9P2-C3-13^2-DF	TAL D		
	3-14	0" - 12"	A9P2-C3-14^2-RMP	TAL A, B	1351874	480755
		0" - 12"	A9P2-C3-14^2-L	TAL C		
	3-15	0" - 12"	A9P2-C3-15^2-RMP	TAL A, B	1351917	480782
		0" - 12"	A9P2-C3-15^2-L	TAL C		
	3-16 V	0" - 12"	A9P2-C3-16^2-V	ARCHIVE	1352017	480775
		12" - 36"	A9P2-C3-16^6-RMP	TAL A, B		
		12" - 36"	A9P2-C3-16^6-L	TAL C		

*Denotes locations in CU-3 through CU-10 where addt'l baseline confirmation samples will be collected in addition to the archive locations.

CU	LOCATION	DEPTH	SAMPLE ID	ANALYSIS	EAST-83	NORTH-83
4	4-1	0" - 12"	A9P2-C4-1^2-RMP	TAL A, B	1351845	480427
		0" - 12"	A9P2-C4-1^2-L	TAL C		
	4-2	0" - 12"	A9P2-C4-2^2-RMP	TAL A, B	1351923	480354
		0" - 12"	A9P2-C4-2^2-L	TAL C		
	4-3V	0" - 12"	A9P2-C4-3^2-V	ARCHIVE	1351849	480497
		12" - 36"	A9P2-C4-3^6-RMP	TAL A, B		
		12" - 36"	A9P2-C4-3^6-L	TAL C		
	4-4	0" - 12"	A9P2-C4-4^2-RMP	TAL A, B	1351950	480482
		0" - 12"	A9P2-C4-4^2-L	TAL C		
	4-5V	0" - 12"	A9P2-C4-5^2-V	ARCHIVE	1351961	480367
		12" - 36"	A9P2-C4-5^6-RMP	TAL A, B		
		12" - 36"	A9P2-C4-5^6-L	TAL C		
	4-6	0" - 12"	A9P2-C4-6^2-RMP	TAL A, B	1351996	480392
		0" - 12"	A9P2-C4-6^2-L	TAL C		
	4-7	0" - 12"	A9P2-C4-7^2-RMP	TAL A, B	1352031	480418
		0" - 12"	A9P2-C4-7^2-L	TAL C		
	4-8	0" - 12"	A9P2-C4-8^2-RMP	TAL A, B	1352005	480452
		0" - 12"	A9P2-C4-8^2-L	TAL C		
		0" - 12"	A9P2-C4-8^2-DF	TAL D		
	4-9	0" - 12"	A9P2-C4-9^2-RMP	TAL A, B	1352064	480469
		0" - 12"	A9P2-C4-9^2-L	TAL C		
	4-10V	0" - 12"	A9P2-C4-10^2-V	ARCHIVE	1352090	480546
		12" - 36"	A9P2-C4-10^6-RMP	TAL A, B		
		12" - 36"	A9P2-C4-10^6-L	TAL C		
	4-11	0" - 12"	A9P2-C4-11^2-RMP	TAL A, B	1352043	480651
		0" - 12"	A9P2-C4-11^2-L	TAL C		
	4-12	0" - 12"	A9P2-C4-12^2-RMP	TAL A, B	1352054	480694
		0" - 12"	A9P2-C4-12^2-L	TAL C		
	4-13D	0" - 12"	A9P2-C4-13^2-RMP	TAL A, B	1351989	480731
		0" - 12"	A9P2-C4-13^2-L	TAL C		
		0" - 12"	A9P2-C4-13^2-RMP-D	TAL A, B		
		0" - 12"	A9P2-C4-13^2-L-D	TAL C		
	4-14	0" - 12"	A9P2-C4-14^2-RMP	TAL A, B	1352080	480756
		0" - 12"	A9P2-C4-14^2-L	TAL C		
		0" - 12"	A9P2-C4-14^2-DF	TAL D		
	4-15V	0" - 12"	A9P2-C4-15^2-V	ARCHIVE	1351925	480828
		12" - 36"	A9P2-C4-15^6-RMP	TAL A, B		
		12" - 36"	A9P2-C4-15^6-L	TAL C		
	4-16*	0" - 12"	A9P2-C4-16^2-RMP	TAL A, B	1351890	480792
		0" - 12"	A9P2-C4-16^2-L	TAL C		
		12" - 36"	A9P2-C4-16^6-RMP	TAL A, B		
		12" - 36"	A9P2-C4-16^6-L	TAL C		

*Denotes locations in CU-3 through CU-10 where addt'l baseline confirmation samples will be collected in addition to the archive locations.

APPENDIX B
SAMPLE LOCATION AND IDENTIFIERS

CU	LOCATION	DEPTH	SAMPLE ID	ANALYSIS	EAST-83	NORTH-83
5	5-1	0" - 12"	A9P2-C5-1^2-RMP	TAL A, B	1351836	480079
		0" - 12"	A9P2-C5-1^2-L	TAL C		
	5-2	0" - 12"	A9P2-C5-2^2-RMP	TAL A, B	1351901	480066
		0" - 12"	A9P2-C5-2^2-L	TAL C		
	5-3	0" - 12"	A9P2-C5-3^2-RMP	TAL A, B	1351833	480146
		0" - 12"	A9P2-C5-3^2-L	TAL C		
	5-4V	0" - 12"	A9P2-C5-4^2-V	ARCHIVE	1351923	480132
		12" - 36"	A9P2-C5-4^6-RMP	TAL A, B		
		12" - 36"	A9P2-C5-4^6-L	TAL C		
	5-5	0" - 12"	A9P2-C5-5^2-RMP	TAL A, B	1351940	480076
		0" - 12"	A9P2-C5-5^2-L	TAL C		
	5-6V	0" - 12"	A9P2-C5-6^2-V	ARCHIVE	1352021	480096
		12" - 36"	A9P2-C5-6^6-RMP	TAL A, B		
		12" - 36"	A9P2-C5-6^6-L	TAL C		
	5-7	0" - 12"	A9P2-C5-7^2-RMP	TAL A, B	1351983	480135
		0" - 12"	A9P2-C5-7^2-L	TAL C		
	5-8	0" - 12"	A9P2-C5-8^2-RMP	TAL A, B	1352015	480172
		0" - 12"	A9P2-C5-8^2-L	TAL C		
		0" - 12"	A9P2-C5-8^2-DF	TAL D		
	5-9	0" - 12"	A9P2-C5-9^2-RMP	TAL A, B	1351871	480223
		0" - 12"	A9P2-C5-9^2-L	TAL C		
		0" - 12"	A9P2-C5-9^2-DF	TAL D		
	5-10D	0" - 12"	A9P2-C5-10^2-RMP	TAL A, B	1351901	480257
		0" - 12"	A9P2-C5-10^2-L	TAL C		
		0" - 12"	A9P2-C5-10^2-RMP-D	TAL A, B		
		0" - 12"	A9P2-C5-10^2-L-D	TAL C		
	5-11	0" - 12"	A9P2-C5-11^2-RMP	TAL A, B	1351869	480307
		0" - 12"	A9P2-C5-11^2-L	TAL C		
	5-12V	0" - 12"	A9P2-C5-12^2-V	ARCHIVE	1351923	480313
		12" - 36"	A9P2-C5-12^6-RMP	TAL A, B		
		12" - 36"	A9P2-C5-12^6-L	TAL C		
	5-13 *	0" - 12"	A9P2-C5-13^2-RMP	TAL A, B	1351955	480206
		0" - 12"	A9P2-C5-13^2-L	TAL C		
		12" - 36"	A9P2-C5-13^6-RMP	TAL A, B		
		12" - 36"	A9P2-C5-13^6-L	TAL C		
	5-14V	0" - 12"	A9P2-C5-14^2-V	ARCHIVE	1352022	480220
		12" - 36"	A9P2-C5-14^6-RMP	TAL A, B		
		12" - 36"	A9P2-C5-14^6-L	TAL C		
	5-15	0" - 12"	A9P2-C5-15^2-RMP	TAL A, B	1351949	480265
		0" - 12"	A9P2-C5-15^2-L	TAL C		
	5-16	0" - 12"	A9P2-C5-16^2-RMP	TAL A, B	1352026	480318
		0" - 12"	A9P2-C5-16^2-L	TAL C		

*Denotes locations in CU-3 through CU-10 where addt'l baseline confirmation samples will be collected in addition to the archive locations.

APPENDIX B
SAMPLE LOCATION AND IDENTIFIERS

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CU	LOCATION	DEPTH	SAMPLE ID	ANALYSIS	EAST-83	NORTH-83
6	6-1	0" - 12"	A9P2-C6-1^2-RMP	TAL A, B	1351866	479802
		0" - 12"	A9P2-C6-1^2-L	TAL C		
	6-2	0" - 12"	A9P2-C6-2^2-RMP	TAL A, B	1351898	479785
		0" - 12"	A9P2-C6-2^2-L	TAL C		
	6-3V	0" - 12"	A9P2-C6-3^2-V	ARCHIVE	1351858	479850
		12" - 36"	A9P2-C6-3^6-RMP	TAL A, B		
		12" - 36"	A9P2-C6-3^6-L	TAL C		
	6-4	0" - 12"	A9P2-C6-4^2-RMP	TAL A, B	1351914	479874
		0" - 12"	A9P2-C6-4^2-L	TAL C		
	6-5V	0" - 12"	A9P2-C6-5^2-V	ARCHIVE	1351932	479805
		12" - 36"	A9P2-C6-5^6-RMP	TAL A, B		
		12" - 36"	A9P2-C6-5^6-L	TAL C		
	6-6	0" - 12"	A9P2-C6-6^2-RMP	TAL A, B	1352002	479785
		0" - 12"	A9P2-C6-6^2-L	TAL C		
		0" - 12"	A9P2-C6-6^2-DF	TAL D		
	6-7	0" - 12"	A9P2-C6-7^2-RMP	TAL A, B	1351970	479829
		0" - 12"	A9P2-C6-7^2-L	TAL C		
	6-8	0" - 12"	A9P2-C6-8^2-RMP	TAL A, B	1351993	479864
		0" - 12"	A9P2-C6-8^2-L	TAL C		
	6-9V	0" - 12"	A9P2-C6-9^2-V	ARCHIVE	1351851	479923
		12" - 36"	A9P2-C6-9^6-RMP	TAL A, B		
		12" - 36"	A9P2-C6-9^6-L	TAL C		
	6-10	0" - 12"	A9P2-C6-10^2-RMP	TAL A, B	1351908	479910
		0" - 12"	A9P2-C6-10^2-L	TAL C		
		0" - 12"	A9P2-C6-10^2-DF	TAL D		
	6-11	0" - 12"	A9P2-C6-11^2-RMP	TAL A, B	1351844	479981
		0" - 12"	A9P2-C6-11^2-L	TAL C		
	6-12 *	0" - 12"	A9P2-C6-12^2-RMP	TAL A, B	1351910	480028
		0" - 12"	A9P2-C6-12^2-L	TAL C		
		12" - 36"	A9P2-C6-12^6-RMP	TAL A, B		
		12" - 36"	A9P2-C6-12^6-L	TAL C		
	6-13	0" - 12"	A9P2-C6-13^2-RMP	TAL A, B	1351958	479893
		0" - 12"	A9P2-C6-13^2-L	TAL C		
	6-14	0" - 12"	A9P2-C6-14^2-RMP	TAL A, B	1351995	479940
		0" - 12"	A9P2-C6-14^2-L	TAL C		
	6-15V	0" - 12"	A9P2-C6-15^2-V	ARCHIVE	1351980	480013
		12" - 36"	A9P2-C6-15^6-RMP	TAL A, B		
		12" - 36"	A9P2-C6-15^6-L	TAL C		
	6-16D	0" - 12"	A9P2-C6-16^2-RMP	TAL A, B	1352030	479981
		0" - 12"	A9P2-C6-16^2-L	TAL C		
		0" - 12"	A9P2-C6-16^2-RMP-D	TAL A, B		
		0" - 12"	A9P2-C6-16^2-L-D	TAL C		

*Denotes locations in CU-3 through CU-10 where addt'l baseline confirmation samples will be collected in addition to the archive locations.

APPENDIX B
SAMPLE LOCATION AND IDENTIFIERS

CU	LOCATION	DEPTH	SAMPLE ID	ANALYSIS	EAST-83	NORTH-83
7	7-1	0" - 12"	A9P2-C7-1^2-RMP	TAL A, B	1351856	479536
		0" - 12"	A9P2-C7-1^2-L	TAL C		
		0" - 12"	A9P2-C7-1^2-DF	TAL D		
	7-2	0" - 12"	A9P2-C7-2^2-RMP	TAL A, B	1351917	479565
		0" - 12"	A9P2-C7-2^2-L	TAL C		
	7-3	0" - 12"	A9P2-C7-3^2-RMP	TAL A, B	1351853	479641
		0" - 12"	A9P2-C7-3^2-L	TAL C		
	7-4V	0" - 12"	A9P2-C7-4^2-V	ARCHIVE	1351916	479613
		12" - 36"	A9P2-C7-4^6-RMP	TAL A, B		
		12" - 36"	A9P2-C7-4^6-L	TAL C		
	7-5	0" - 12"	A9P2-C7-5^2-RMP	TAL A, B	1351962	479563
		0" - 12"	A9P2-C7-5^2-L	TAL C		
	7-6D	0" - 12"	A9P2-C7-6^2-RMP	TAL A, B	1352057	479542
		0" - 12"	A9P2-C7-6^2-L	TAL C		
		0" - 12"	A9P2-C7-6^2-RMP-D	TAL A, B		
		0" - 12"	A9P2-C7-6^2-L-D	TAL C		
	7-7V	0" - 12"	A9P2-C7-7^2-V	ARCHIVE	1351999	479607
		12" - 36"	A9P2-C7-7^6-RMP	TAL A, B		
		12" - 36"	A9P2-C7-7^6-L	TAL C		
	7-8	0" - 12"	A9P2-C7-8^2-RMP	TAL A, B	1352033	479600
		0" - 12"	A9P2-C7-8^2-L	TAL C		
		0" - 12"	A9P2-C7-8^2-DF	TAL D		
	7-9V	0" - 12"	A9P2-C7-9^2-V	ARCHIVE	1351829	479688
		12" - 36"	A9P2-C7-9^6-RMP	TAL A, B		
		12" - 36"	A9P2-C7-9^6-L	TAL C		
	7-10 *	0" - 12"	A9P2-C7-10^2-RMP	TAL A, B	1351932	479675
		0" - 12"	A9P2-C7-10^2-L	TAL C		
		12" - 36"	A9P2-C7-10^6-RMP	TAL A, B		
		12" - 36"	A9P2-C7-10^6-L	TAL C		
	7-11	0" - 12"	A9P2-C7-11^2-RMP	TAL A, B	1351896	479716
		0" - 12"	A9P2-C7-11^2-L	TAL C		
	7-12	0" - 12"	A9P2-C7-12^2-RMP	TAL A, B	1351945	479720
		0" - 12"	A9P2-C7-12^2-L	TAL C		
	7-13	0" - 12"	A9P2-C7-13^2-RMP	TAL A, B	1351980	479641
		0" - 12"	A9P2-C7-13^2-L	TAL C		
	7-14	0" - 12"	A9P2-C7-14^2-RMP	TAL A, B	1352075	479619
		0" - 12"	A9P2-C7-14^2-L	TAL C		
	7-15	0" - 12"	A9P2-C7-15^2-RMP	TAL A, B	1352011	479716
		0" - 12"	A9P2-C7-15^2-L	TAL C		
	7-16V	0" - 12"	A9P2-C7-16^2-V	ARCHIVE	1352061	479725
		12" - 36"	A9P2-C7-16^6-RMP	TAL A, B		
		12" - 36"	A9P2-C7-16^6-L	TAL C		

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APPENDIX B
SAMPLE LOCATION AND IDENTIFIERS

CU	LOCATION	DEPTH	SAMPLE ID	ANALYSIS	EAST-83	NORTH-83
8	8-1	0" - 12"	A9P2-C8-1^2-RMP	TAL A, B	1352060	479755
		0" - 12"	A9P2-C8-1^2-L	TAL C		
	8-2	0" - 12"	A9P2-C8-2^2-RMP	TAL A, B	1352091	479763
		0" - 12"	A9P2-C8-2^2-L	TAL C		
	8-3V	0" - 12"	A9P2-C8-3^2-V	ARCHIVE	1352084	479832
		12" - 36"	A9P2-C8-3^6-RMP	TAL A, B		
		12" - 36"	A9P2-C8-3^6-L	TAL C		
	8-4	0" - 12"	A9P2-C8-4^2-RMP	TAL A, B	1352143	479806
		0" - 12"	A9P2-C8-4^2-L	TAL C		
		0" - 12"	A9P2-C8-4^2-DF	TAL D		
	8-5V	0" - 12"	A9P2-C8-5^2-V	ARCHIVE	1352063	479903
		12" - 36"	A9P2-C8-5^6-RMP	TAL A, B		
		12" - 36"	A9P2-C8-5^6-L	TAL C		
	8-6	0" - 12"	A9P2-C8-6^2-RMP	TAL A, B	1352111	479865
		0" - 12"	A9P2-C8-6^2-L	TAL C		
	8-7*	0" - 12"	A9P2-C8-7^2-RMP	TAL A, B	1352038	479984
		0" - 12"	A9P2-C8-7^2-L	TAL C		
		12" - 36"	A9P2-C8-7^6-RMP	TAL A, B		
		12" - 36"	A9P2-C8-7^6-L	TAL C		
	8-8	0" - 12"	A9P2-C8-8^2-RMP	TAL A, B	1352108	479966
		0" - 12"	A9P2-C8-8^2-L	TAL C		
	8-9	0" - 12"	A9P2-C8-9^2-RMP	TAL A, B	1352141	479862
		0" - 12"	A9P2-C8-9^2-L	TAL C		
	8-10	0" - 12"	A9P2-C8-10^2-RMP	TAL A, B	1352135	479951
		0" - 12"	A9P2-C8-10^2-L	TAL C		
	8-11V	0" - 12"	A9P2-C8-11^2-V	ARCHIVE	1352172	479930
		12" - 36"	A9P2-C8-11^6-RMP	TAL A, B		
		12" - 36"	A9P2-C8-11^6-L	TAL C		
	8-12D	0" - 12"	A9P2-C8-12^2-RMP	TAL A, B	1352205	480058
		0" - 12"	A9P2-C8-12^2-L	TAL C		
		0" - 12"	A9P2-C8-12^2-RMP-D	TAL A, B		
		0" - 12"	A9P2-C8-12^2-L-D	TAL C		
	8-13	0" - 12"	A9P2-C8-13^2-RMP	TAL A, B	1352046	480053
		0" - 12"	A9P2-C8-13^2-L	TAL C		
		0" - 12"	A9P2-C8-13^2-DF	TAL D		
	8-14V	0" - 12"	A9P2-C8-14^2-V	ARCHIVE	1352085	480092
		12" - 36"	A9P2-C8-14^6-RMP	TAL A, B		
		12" - 36"	A9P2-C8-14^6-L	TAL C		
	8-15	0" - 12"	A9P2-C8-15^2-RMP	TAL A, B	1352132	480062
		0" - 12"	A9P2-C8-15^2-L	TAL C		
	8-16	0" - 12"	A9P2-C8-16^2-RMP	TAL A, B	1352162	480039
		0" - 12"	A9P2-C8-16^2-L	TAL C		

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APPENDIX B
SAMPLE LOCATION AND IDENTIFIERS

CU	LOCATION	DEPTH	SAMPLE ID	ANALYSIS	EAST-83	NORTH-83
9	9-1	0" - 12"	A9P2-C9-1^2-RMP	TAL A, B	1352080	480162
		0" - 12"	A9P2-C9-1^2-L	TAL C		
	9-2V	0" - 12"	A9P2-C9-2^2-V	ARCHIVE	1352145	480145
		12" - 36"	A9P2-C9-2^6-RMP	TAL A, B		
		12" - 36"	A9P2-C9-2^6-L	TAL C		
	9-3	0" - 12"	A9P2-C9-3^2-RMP	TAL A, B	1352044	480236
		0" - 12"	A9P2-C9-3^2-L	TAL C		
	9-4D	0" - 12"	A9P2-C9-4^2-RMP	TAL A, B	1352129	480173
		0" - 12"	A9P2-C9-4^2-L	TAL C		
		0" - 12"	A9P2-C9-4^2-RMP-D	TAL A, B		
		0" - 12"	A9P2-C9-4^2-L-D	TAL C		
	9-5V	0" - 12"	A9P2-C9-5^2-V	ARCHIVE	1352180	480127
		12" - 36"	A9P2-C9-5^6-RMP	TAL A, B		
		12" - 36"	A9P2-C9-5^6-L	TAL C		
	9-6	0" - 12"	A9P2-C9-6^2-RMP	TAL A, B	1352225	480089
		0" - 12"	A9P2-C9-6^2-L	TAL C		
		0" - 12"	A9P2-C9-6^2-DF	TAL D		
	9-7	0" - 12"	A9P2-C9-7^2-RMP	TAL A, B	1352170	480178
		0" - 12"	A9P2-C9-7^2-L	TAL C		
	9-8	0" - 12"	A9P2-C9-8^2-RMP	TAL A, B	1352248	480194
		0" - 12"	A9P2-C9-8^2-L	TAL C		
	9-9V	0" - 12"	A9P2-C9-9^2-V	ARCHIVE	1352044	480276
		12" - 36"	A9P2-C9-9^6-RMP	TAL A, B		
		12" - 36"	A9P2-C9-9^6-L	TAL C		
	9-10	0" - 12"	A9P2-C9-10^2-RMP	TAL A, B	1352147	480250
		0" - 12"	A9P2-C9-10^2-L	TAL C		
	9-11	0" - 12"	A9P2-C9-11^2-RMP	TAL A, B	1352054	480312
		0" - 12"	A9P2-C9-11^2-L	TAL C		
		0" - 12"	A9P2-C9-11^2-DF	TAL D		
	9-12*	0" - 12"	A9P2-C9-12^2-RMP	TAL A, B	1352151	480297
		0" - 12"	A9P2-C9-12^2-L	TAL C		
		12" - 36"	A9P2-C9-12^6-RMP	TAL A, B		
		12" - 36"	A9P2-C9-12^6-L	TAL C		
	9-13	0" - 12"	A9P2-C9-13^2-RMP	TAL A, B	1352192	480225
		0" - 12"	A9P2-C9-13^2-L	TAL C		
	9-14	0" - 12"	A9P2-C9-14^2-RMP	TAL A, B	1352280	480213
		0" - 12"	A9P2-C9-14^2-L	TAL C		
	9-15	0" - 12"	A9P2-C9-15^2-RMP	TAL A, B	1352198	480254
		0" - 12"	A9P2-C9-15^2-L	TAL C		
	9-16V	0" - 12"	A9P2-C9-16^2-V	ARCHIVE	1352278	480258
		12" - 36"	A9P2-C9-16^6-RMP	TAL A, B		
		12" - 36"	A9P2-C9-16^6-L	TAL C		

*Denotes locations in CU-3 through CU-10 where addt'l baseline confirmation samples will be collected in addition to the archive locations.

APPENDIX B
SAMPLE LOCATION AND IDENTIFIERS

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CU	LOCATION	DEPTH	SAMPLE ID	ANALYSIS	EAST-83	NORTH-83
10	10-1	0" - 12"	A9P2-C10-1^2-RMP	TAL A, B	1352056	480377
		0" - 12"	A9P2-C10-1^2-L	TAL C		
	10-2	0" - 12"	A9P2-C10-2^2-RMP	TAL A, B	1352132	480365
		0" - 12"	A9P2-C10-2^2-L	TAL C		
	10-3V	0" - 12"	A9P2-C10-3^2-V	ARCHIVE	1352091	480430
		12" - 36"	A9P2-C10-3^6-RMP	TAL A, B		
		12" - 36"	A9P2-C10-3^6-L	TAL C		
	10-4	0" - 12"	A9P2-C10-4^2-RMP	TAL A, B	1352139	480401
		0" - 12"	A9P2-C10-4^2-L	TAL C		
	10-5	0" - 12"	A9P2-C10-5^2-RMP	TAL A, B	1352205	480331
		0" - 12"	A9P2-C10-5^2-L	TAL C		
		0" - 12"	A9P2-C10-5^2-DF	TAL D		
	10-6	0" - 12"	A9P2-C10-6^2-RMP	TAL A, B	1352312	480311
		0" - 12"	A9P2-C10-6^2-L	TAL C		
	10-7*	0" - 12"	A9P2-C10-7^2-RMP	TAL A, B	1352248	480367
		0" - 12"	A9P2-C10-7^2-L	TAL C		
		12" - 36"	A9P2-C10-7^6-RMP	TAL A, B		
		12" - 36"	A9P2-C10-7^6-L	TAL C		
	10-8V	0" - 12"	A9P2-C10-8^2-V	ARCHIVE	1352321	480352
		12" - 36"	A9P2-C10-8^6-RMP	TAL A, B		
		12" - 36"	A9P2-C10-8^6-L	TAL C		
	10-9D	0" - 12"	A9P2-C10-9^2-RMP	TAL A, B	1352104	480471
		0" - 12"	A9P2-C10-9^2-L	TAL C		
		0" - 12"	A9P2-C10-9^2-RMP-D	TAL A, B		
		0" - 12"	A9P2-C10-9^2-L-D	TAL C		
	10-10	0" - 12"	A9P2-C10-10^2-RMP	TAL A, B	1352175	480446
		0" - 12"	A9P2-C10-10^2-L	TAL C		
		0" - 12"	A9P2-C10-10^2-DF	TAL D		
	10-11V	0" - 12"	A9P2-C10-11^2-V	ARCHIVE	1352115	480532
		12" - 36"	A9P2-C10-11^6-RMP	TAL A, B		
		12" - 36"	A9P2-C10-11^6-L	TAL C		
	10-12	0" - 12"	A9P2-C10-12^2-RMP	TAL A, B	1352216	480466
		0" - 12"	A9P2-C10-12^2-L	TAL C		
	10-13	0" - 12"	A9P2-C10-13^2-RMP	TAL A, B	1352270	480423
		0" - 12"	A9P2-C10-13^2-L	TAL C		
	10-14	0" - 12"	A9P2-C10-14^2-RMP	TAL A, B	1352311	480394
		0" - 12"	A9P2-C10-14^2-L	TAL C		
	10-15	0" - 12"	A9P2-C10-15^2-RMP	TAL A, B	1352283	480470
		0" - 12"	A9P2-C10-15^2-L	TAL C		
	10-16V	0" - 12"	A9P2-C10-16^2-V	ARCHIVE	1352334	480431
		12" - 36"	A9P2-C10-16^6-RMP	TAL A, B		
		12" - 36"	A9P2-C10-16^6-L	TAL C		

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APPENDIX B
SAMPLE LOCATION AND IDENTIFIERS

CU	LOCATION	DEPTH	SAMPLE ID	ANALYSIS	EAST-83	NORTH-83
11	11-1	0" - 6"	A9P2-C11-1^1-R	TAL H	1350003	484060
	11-2	0" - 6"	A9P2-C11-2^1-R	TAL H	1350040	484059
	11-3V	0" - 6"	A9P2-C11-3^1-V	ARCHIVE	1350059	484051
	11-4	0" - 6"	A9P2-C11-4^1-R	TAL H	1350092	484043
	11-5V	0" - 6"	A9P2-C11-5^1-V	ARCHIVE	1350112	484039
	11-6	0" - 6"	A9P2-C11-6^1-R	TAL H	1350127	484036
	11-7	0" - 6"	A9P2-C11-7^1-R	TAL H	1350149	484022
	11-8	0" - 6"	A9P2-C11-8^1-R	TAL H	1350163	484032
	11-9	0" - 6"	A9P2-C11-9^1-R	TAL H	1350181	484026
	11-10V	0" - 6"	A9P2-C11-10^1-V	ARCHIVE	1350205	484026
	11-11	0" - 6"	A9P2-C11-11^1-R	TAL H	1350232	484031
	11-12D	0" - 6"	A9P2-C11-12^1-R	TAL H	1350254	484032
		0" - 6"	A9P2-C11-12^1-R-D	TAL H		
	11-13	0" - 6"	A9P2-C11-13^1-R	TAL H	1350267	484040
	11-14V	0" - 6"	A9P2-C11-14^1-V	ARCHIVE	1350295	484033
	11-15	0" - 6"	A9P2-C11-15^1-R	TAL H	1350318	484033
	11-16	0" - 6"	A9P2-C11-16^1-R	TAL H	1350328	484042

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